

Abstract

Apparatus and methods of their use are described for engaging a pumping cartridge with a pump drive. In certain embodiments, the cartridge, comprising a cylinder and a movable piston assembly, is initially assembled or subsequently positioned so that the
5 distance between the attachment point on the piston assembly for coupling to a drive assembly, and a reference point on the cylinder, is greater than the maximal distance that will be encountered during normal oscillation of the piston during use. The cartridge, in certain
embodiments may be pressed into a drive assembly having means for immobilizing the cartridge and means for coupling the piston assembly to the driveshaft. In certain
10 embodiments, when the cartridge is fully inserted into the drive assembly, the piston is pressed into the cylinder sufficiently to establish a selected distance so that the piston shaft is in the proper position to engage with a coupling mechanism carried on the driveshaft.